

Evaluation of Gingival Retraction with Racegel, Tetrahydrozoline and Viscostat Materials: A Comparative Study

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ABSTRACT

Background: For effective replica of teeth and supporting structures, gingival displacement is mandatory. The present study was conducted to compare different agents in gingival retraction.

Materials & Methods: The present study was conducted in the department of Prosthodontics. It comprised of 60 patients age ranged 26-40 years of both genders. In all subjects, maxillary right canine was selected. three gingival displacement agents such as Racegel, tetrahydrozoline and viscostat were used.

Results: Out of 60 subjects, males were 35 and females were 25. In group I, racegel, in group II, tetrahydrozoline and in group III, viscostat material was used. Table III, graph II shows that mean gingival displacement in group I was 0.241 mm², in group II was 0.210 mm² and in group III was 0.152 mm². The difference was significant (P< 0.05).

Conclusion: Authors found that racegel gave maximum gingival retraction followed by tetrahydrozoline and viscostat material.

Keywords: Racegel, Tetrahydrozoline, Viscostat.

INTRODUCTION

In prosthodontics, the recording of impression of maxillary and mandibular ridges is crucial which determines success of treatment.¹ For effective replica of teeth and supporting structures, gingival displacement is mandatory. Gingival displacement enhances efficient impression making, fluid management, finishing and placement of tooth preparation margins, removal of excess cement, etc.² It has been observed that impressions taken with sulcular width lesser than the critical value i.e 0.15-0.2 mm, have higher chances of voids in the marginal area. It results in decrease in tear strength of impression material.³ Similarly in case of full

coverage preparations subgingival margins are required due to caries, esthetic demands, existing restorations or the need for additional retention. To obtain exact and definite cervical finish line, gingival retraction is necessary with good agent. The cervical finish lines recorded by the clinicians are inadequate. The inability of the impression materials to adequately displace soft tissues, fluids or debris mandates adequate isolation.⁴ The gingival displacement procedure allows the impression material to flow apical to the subgingival finish line thereby registering it and an area apical to it.

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In dentistry, various agents are used for gingival retraction. Agent such as tetrahydrozoline, racegel and aluminum chloride is commonly used. All are mechanical methods of gingival displacement. Racegel is less time-consuming, more comfortable to the patient, easy application, and minimally invasive.⁵ The present study was conducted to compare different agents in gingival retraction.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 60 patients age ranged 26-40 years of both genders. The study protocol was approved from institutional ethical committee. All patients were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was recorded. In all subjects, maxillary right canine was selected. Primary impression with irreversible hydrocolloid was obtained and casts were prepared. Custom trays were made. Canine tooth was bisected, and 2 mm marking from the marginal gingiva was made on this bisected line on the labial surface with an indelible pencil.

Impressions were made using medium viscosity polyvinyl siloxane. Similarly, three gingival displacement agents such as Racegel, tetrahydrozoline and viscostat were used. Three-millimeter thick buccolingual slice sections were obtained of the models and measured under a stereo microscope ($\times 20$ magnification), and the amount of displacement was calculated. Results thus obtained were tabulated and expressed in means. Mann Whitney test was used to compare mean gingival retraction in different groups. P value less than 0.05 was considered significant.

RESULTS

Table I, graph I shows that out of 60 subjects, males were 35 and females were 25. Table II shows that in group I, racegel, in group II, tetrahydrozoline and in group III, viscostat material was used. Table III, graph II shows that mean gingival displacement in group I was 0.241 mm², in group II was 0.210 mm² and in group III was 0.152 mm.² The difference was significant ($P < 0.05$).

DISCUSSION

Different method of gingival retraction is used. The chemico-mechanical method with retraction cord impregnated or soaked in various chemicals is the most frequently used method.⁶ The action is due to combination of both mechanic and chemical property. The retraction cord mechanically

Table 1: Distribution of subjects.

Total- 60		
Genders	Males	Females
Number	35	25

Graph 1: Distribution of subjects.

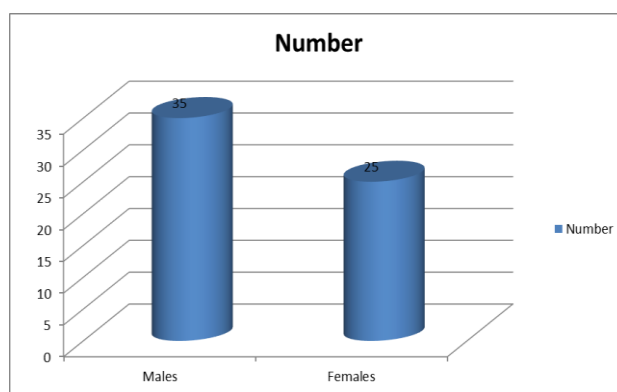


Table 2: Distribution I different groups.

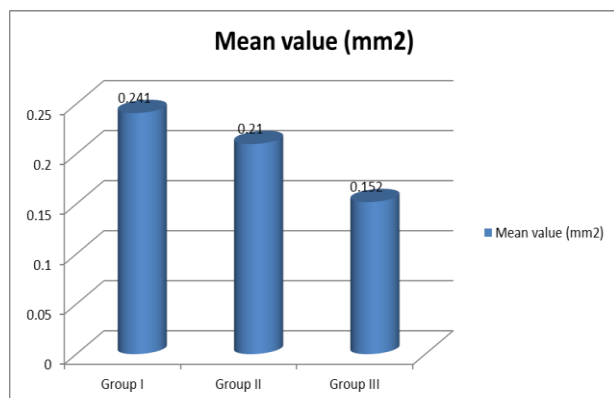
Group	Group I	Group II	Group III
Agent	Racegel	Tetrahydrozoline	Viscostat
Number	20	20	20

Table 2: Comparison of gingival displacement in all groups.

Groups	Mean value (mm ²)	P value
Group I	0.241	0.05
Group II	0.210	
Group III	0.152	

Mann Whitney test

Graph 2: Comparison of gingival displacement in all groups.



displaces the gingival tissue and absorbs moisture contamination in the gingival sulcus, while the chemical agents control hemorrhage and shrink the gingival tissues. It has several drawbacks also. It has been observed that the pH these agents are acidic in nature.⁷ Prolonged exposure to these agents causes alteration and instability in smear layer and produces etching up to several degrees, which usually happens as the recommended time for a chemico-mechanical displacement is 7–10 minutes.⁸ The present study was conducted to compare different agents in gingival retraction.

In this study we used racegel, tetrahydrozoline and viscostat material as gingival retraction materials. We included 60 subjects who willingly joined the study. Out of 60 subjects, males were 35 and females were 25. Chaudhary et al⁹ in their study included 30 subjects who met inclusion and exclusion criteria. Maxillary Impressions were made with irreversible hydrocolloid for all subjects. Tray material was used for making the special tray. Retraction was done with aluminium chloride; Tetrahydrozoline and Expasyl according to Latin block design. Impressions were poured with die stone. Casts were retrieved and sections were made with die cutter. 3 mm thin slices were obtained. Each slice was used to measure the amount of retraction under stereomicroscope under 20x and images were transferred to image analyser. It was observed that the amount of gingival retraction obtained by using aluminium chloride as gingival retraction agent was maximum 148238.33 μm^2 compared to tetrahydrozoline 140737.87 μm^2 and Expasyl 67784.90 μm^2 .

In present study we obtained maximum amount of gingival retraction with racegel followed by tetrahydrozoline and viscostat material. The mean gingival displacement in group I was 0.241 mm², in group II was 0.210 mm² and in group III was 0.152 mm.²

Kesari et al¹⁰ conducted an in vivo study to evaluate the amount of gingival displacement produced by four different gingival displacement agents. Agents used were ViscoStat clear, Vasozone, and Racegel with cord and Racegel without cord. The Kruskal–Wallis test and the Mann–Whitney U-test were used for comparison between the amounts of gingival displacement produced by them. Mean displacement produced (in mm²) by Racegel with cord, tetrahydrozoline, ViscoStat clear, and Racegel was 0.2256, 0.2158, 0.2069, and 0.1414, respectively.

Raghav et al¹¹ in their study evaluated the efficacy of three different gingival retraction systems, i.e., Magic Foam Cord, expasyl paste, and aluminium chloride-impregnated retraction cord. Following impressions, obtained casts were measured for gingival sulcus opening width under optical microscope (with imaging system software). The presence of bleeding after removal of material, ease of procedure, and patient's comfort were also evaluated. Change in the width of sulcus recorded with aluminum chloride-impregnated retraction cord was 0.51560 ± 0.087563 mm. The application of expasyl paste showed results of 0.456800 ± 0.145651 comparable with aluminum chloride-impregnated retraction cord and the Magic Foam Cord resulted the least change in width of sulcus i.e. 0.30080 ± 0.135121 mm.

Raja et al¹² studied the forces applied to the sulcus during various dental procedures. The principal investigator was the same person who was calibrated and was trained in the use of the cord packer with the recommended force. He performed the displacement in all the participants. They reported that with expasyl displacement technique it is possible to achieve adequate opening of the sulcus without damaging the epithelial attachment.

CONCLUSION

Authors found that racegel gave maximum gingival retraction followed by tetrahydrozoline and viscostat material.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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